STATE OF NEW HAMPSHIRE
OFFICE OF THE GOVERNOR

STRENGTHENING STATE GOVERNMENT INFORMATION TECHNOLOGY MANAGEMENT AND SERVICE

APRIL 2005

(BASED ON RESEARCH CONDUCTED BY
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STRENGTHENING STATE GOVERNMENT INFORMATION TECHNOLOGY MANAGEMENT AND SERVICE

EXECUTIVE SUMMARY

In December 2004, Governor-elect John Lynch commissioned a review of New Hampshire state government's information technology (IT) management and service operations. In scope, the review included:

- Management and organizational structure of the state's IT resources
- Preparations for the state's new Enterprise Resource Planning (ERP) system and its new Medicaid Management Information System (MMIS)
- Opportunities for overall state IT expense reduction and service improvement in the future.

The findings and recommendations presented in this report identify for the Governor and the new state Information Technology Council some of the most important information technology priorities for New Hampshire state government in the next few years. However, the report should not be considered exhaustive and should be used only as a starting point for developing a full, formal strategy and implementation plans for managing the state's IT assets for the benefit of New Hampshire's citizens and their state government as a whole.

DEVELOPMENT OF THE OFFICE OF INFORMATION TECHNOLOGY

The following table summarizes key findings and recommendations regarding the management and organizational structure of the state's IT resources.

FINDINGS	RECOMMENDATIONS
#1 OIT was launched before essential preparations were completed.	#1 Activate the Information Technology Council and charge it with developing a long-term strategic plan for New Hampshire state government's enterprise-wide IT priorities, management, and organizational structure.
#2 OIT's initial focus was cost reduction through resource consolidation, not customer service.	#2 The IT Council should identify, review, and make recommendations to the Governor and the Legislature regarding the coordination, timing, and funding mechanisms to be used for the state's major IT initiatives.
#3 Even though OIT is part of the Executive Department, the agency was never clearly empowered nor given adequate strategic guidance.	
#4 Despite a premature launch, resource constraints, and insufficient strategic direction, OIT has laid a good foundation for future success during its first 18 months of operation.	#3 Ensure good partnerships between OIT and its customers.
	#4 OIT should work with its customer agencies to implement strong and repeatable project management practices.
#5 OIT has not been given the right resources to satisfy its customers and achieve its potential.	#5 Provide OIT with sufficient resources to manage its business functions well, and to address the IT needs of small state agencies that previously were underserved.

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MANAGEMENT OF MAJOR STATE INFORMATION TECHNOLOGY PROJECTS

The following table summarizes findings and recommendations regarding the state's new Enterprise Resource Planning (ERP) System and new Medicaid Management Information System (MMIS).

FINDINGS	RECOMMENDATIONS
#1 The State of New Hampshire is in acute need of a new ERP system.	#1 The Governor's Office and operating agencies should support and help guide implementation planning for the state's new ERP system.
#2 Implementation of the ERP system is an important opportunity to improve fundamentally the way New Hampshire state government conducts business.	#2 Adequate time should be taken to review the ERP implementation plan in detail to ensure that its business objectives are strategic, clear, and measurable.
#3 To achieve its primary business objectives and be completed on time and within budget, the ERP project needs to have the right resources.	#3 Agencies should develop strategies to allow the best resources to engage fully in the ERP project.
#4 While adequate provision for security and disaster mitigation appears to be in place for the state's major projects, such protection needs to be standardized across agency IT operations.	#4 Security, emergency preparedness, and disaster recovery should be addressed from an enterprise perspective, not just at the individual project level.

ONGOING INFORMATION TECHNOLOGY COST REDUCTION AND SERVICE IMPROVEMENT

The following table summarizes principal findings and recommendations regarding overall state IT expense reduction and service improvement.

FINDINGS	RECOMMENDATIONS
#1 As the state continues to embrace high-bandwidth network communications as the foundation for its IT operations, consolidating technical resources to develop software applications and manage agency IT infrastructures will become increasingly cost-effective.	#1 Standards should be actively pursued and implemented across the state government IT infrastructure.
	#2 Agency data centers should be consolidated as much and as soon as possible.
#2 Agency IT projects are not systematically evaluated to ensure they will have an adequate payback for state government as a whole.	#3 A funding methodology should be established to cover start-up costs for projects that will show a good return on investment within a two- to five-year period.

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SCOPE AND OBJECTIVES OF THIS REPORT

In December 2004, Governor-elect John Lynch commissioned a review of New Hampshire state government's information technology (IT) management and service operations. In scope, the review included:

- Management and organizational structure of the state's IT resources
- Preparations for the state's new Enterprise Resource Planning (ERP) system and its new Medicaid Management Information System (MMIS)
- Opportunities for overall state IT expense reduction and service improvement in the future.

This report, based on the research of Messrs. Dan Taylor, Eric Herr, and other members of the Governor's Transition Team, presents findings and recommendations for Governor Lynch on each of these subjects. The report comprises three sections, one corresponding to each of the above subjects, as follows:

1) Development of the Office of Information Technology
2) Management of Major State Information Technology Projects
3) Ongoing Information Technology Cost Reduction and Service Improvement.

The findings and recommendations presented in this report identify for the Governor and the new state Information Technology Council some of the most important information technology priorities for New Hampshire state government in the next few years. However, the report should not be considered exhaustive and should be used only as a starting point for developing a full, formal strategy and implementation plans for managing the state's IT assets for the benefit of New Hampshire's citizens and their state government as a whole.

STRENGTHENING STATE GOVERNMENT INFORMATION TECHNOLOGY MANAGEMENT AND SERVICE

1. DEVELOPMENT OF THE OFFICE OF INFORMATION TECHNOLOGY

BACKGROUND

Centralization of an organization's information technology resources to gain efficiency and improve service is not new. It is not even new to New Hampshire state government. IT was first centralized in New Hampshire in 1967 with the creation of the Central Data Processing unit (CDP). CDP and centralized state government IT resources lasted largely intact until 1983 when CDP was transformed into the Division of Information Services (DIS) in the Department of Administrative Services (DAS).

DIS's establishment in 1983 was the first step in returning to a decentralized IT management structure. At the time of DIS's creation, a number of state agencies – including the Department of Safety, the Department of Transportation, the Department of Employment Security, and the New Hampshire Liquor Commission – were given independent control of their IT resources and exempted from using centralized IT services. In 1991, decentralization became complete when DIS was disbanded and all state agencies gained control of their own IT resources. To provide guidance, establish statewide standards, and report on IT utilization effectiveness, the Office of Information Technology Management (OITM) also was created in 1991, but it had no operational responsibility.

Only six years later, in 1997, the Data Center Consolidation Committee (DCCC) was created to determine whether operating and service efficiencies could be achieved by consolidating the numerous state government data centers that had sprung up since decentralization. Then, in February 2000, Governor Jeanne Shaheen established the Information Technology Strategic Planning Commission (ITSPC) to develop New Hampshire state government's vision for the digital future.

The report of the Information Technology Strategic Planning Commission, *New Hampshire State Government in the Internet Age*, recommended a multi-year plan to centralize IT services in ways that would allow state government to provide better service to citizens using the Internet and related broad-band technologies. The primary motivation for this recommendation was the rapidly evolving information technology environment in which large organizations – including corporations, universities, and governments – found themselves having to operate by the end of the 1990s. In the 1960s and 1970s, mainframe computing was the dominant information technology used by large enterprises, and it made good management and budgetary sense for them to centralize their data centers and servers. The early 1980s saw the development of PCs and minicomputers, standalone technologies with limited networking capability in their early years of adoption. The networking limits of PCs and minicomputers made decentralized architectures that placed computing power nearest the user the norm for these technologies, and IT management and service organizations naturally followed suit.

Then came the Internet Age. By the end of the 1990s, networking and telecommunications technologies had advanced far beyond anybody's wildest expectations only a few years before. As computing and networking capabilities continued to grow and prices for equipment and software continued to drop, personnel and software support became the driving factors in IT cost-effectiveness calculations. The advent of reliable and affordable high-bandwidth communications once again made centralizing IT resources the most cost-effective manner in which to develop software applications for and manage the IT infrastructures of large, complex organizations. By July 2003, when New Hampshire state government's new Office of Information Technology (OIT) was established, Governor Benson and the Legislature were eager to capitalize quickly on the improvements in IT management and service and the potential cost savings that IT centralization promised to produce.

FINDINGS

Finding #1: OIT was launched before essential preparations were completed.

Because a major organizational rearrangement such as the centralization of an enterprise's IT resources has the potential to cause significant disruption in ongoing services and operations, it would have made sense to be cautious and surgical in determining which parts of New Hampshire state government's IT resources and infrastructure to centralize and when. Not all state agencies' IT functions were equally ready for or suited to centralization in 2003. A careful determination of the most appropriate candidates for centralization should have been done to minimize the possibility of disruption to critical state operations and citizen services. Instead – with the exception of the state's Financial Data Management system (which has remained under the organization of the Department of Administrative Services) – all executive branch IT resources and operations were consolidated at once under the new Office of Information Technology (OIT).

OIT was established by law (RSA 4-D:4) on July 1, 2003. On July 16, 2003, more than 300 managers and staff members from nine state agencies were transferred to the new agency. OIT's abrupt creation went forward even though planning for the new agency originally envisioned a phased, incremental approach to consolidation of the state's IT resources over 12 to 24 months.

OIT's accelerated launch led to several unforeseen problems. Two in particular stand out:

- The initial transfer of resources to OIT focused on technical staff members. Only a few administrative staff members were included in the reorganization. This early lack of administrative resources (which because of Governor Benson's hiring freeze in 2004 has never been adequately made up) left OIT ill-prepared to meet many of its new business responsibilities. Overnight, OIT became responsible for approving all state agency purchases of IT goods and services costing more than $250.^{00}$, managing numerous IT service RFPs and contracts established by nine different agencies, and controlling the new agency's own finances as well as special funds it was required to manage for the benefit of other agencies. OIT took on these tasks while most of the administrative staff members who previously had performed them remained with other state agencies.

- At its launch, OIT was required to be "self-funding" and chargeback its operating costs to other state agencies according to their utilization of OIT's resources and services. However, no chargeback or cost-allocation plan existed. In fact, before OIT's creation, it had not been possible to account accurately for all the resources and funds devoted to information technology across state government. (Under the state's pre-OIT decentralized IT management structure, each agency had its own IT budget, but this did not represent all of its actual IT costs; many were hidden in agency budgets as non-IT costs and did not become apparent until after OIT's formation.) Thus, in addition to organizing a new agency from the ground up, OIT had to create an unprecedented IT billing and cost-allocation process that would be easy to understand and considered fair by other state agencies to which it applied.

Finding #2: OIT's initial focus was cost reduction through resource consolidation, not customer service.

Faced all at once with the competing priorities of maintaining state agency IT operations, assimilating hundreds of staff members into the new organization, *and* achieving cost savings of $11 million during the FY04-05 biennium, OIT failed to give adequate attention to providing consistently good customer service. For agencies that had been accustomed to controlling their own independent IT resources before OIT's creation, OIT's perceived lack of responsiveness to their requests for service rankled. This situation was exacerbated by two factors, one outside of OIT's control and one of its own making.

First, OIT's inadequate administrative resources (especially for procurement functions) led to new process delays for agencies. In stereotypical "Catch 22" fashion, if OIT attempted to mitigate these delays by temporarily reassigning technical resources to handle administrative tasks, it would end up compromising its ability to keep up with customer agency demands for direct IT services and support and thereby create new causes for complaint.

Second, during OIT's first year of operation, senior management did a poor job of communicating to both customer state agencies and the Legislature what the new agency was up against. In particular, customer agencies were not afforded an opportunity to "weigh in" on the design and application of OIT's cost-allocation scheme because of the initial pressure on OIT to find quick savings.

At the outset, the focus of OIT's senior management became getting an accurate handle on the full cost of the state's collective IT assets and ongoing support requirements to see how they could be reduced by at least $5.5 million per year. Much of the base of information required to do this had to be developed from scratch because individual agencies had never compiled such data in a standardized fashion themselves. (It should be noted here that, even if OIT had not been required to implement a cost-allocation scheme, it nevertheless would have needed to gather this information to be able to serve its customer agencies well.) OIT's efforts to acquire this information were often seen by customer agencies and their legislative advocates as yet another imposition.

OIT's senior management did relatively little to reach out to agency heads and legislators to seek their input and defuse the tension being created by this situation. Thus, the seeds were sown for an enormous customer agency backlash when OIT later unveiled its customer agency chargeback plan as part of the FY06-FY07 budget process. *Regardless of the accuracy of the data and methodology*[*] on which OIT's cost-allocation scheme is based, customer agencies have been right to complain that they were not given enough opportunity to understand and comment on it before it was put into effect. It is hardly surprising that many of them have protested that they will receive less IT service at greater cost under OIT's chargeback arrangement than they enjoyed before OIT's formation.

In general, OIT's early inattention to consistent, regular communication compounded customer agency animosity generated by the abrupt change in New Hampshire state government's IT management structure. First impressions can last a long time. Even though it has greatly improved its customer communications in the past six months, OIT today still has much work to do to rehabilitate its reputation as a responsive service organization.

[*]While in need of some fine-tuning, the data and methodology on which OIT's cost-allocation scheme is based appear to be sound and are derived from longstanding and well-tested models used by the Department of Health and Human Services and other state agencies required to allocate their costs for federal reimbursement and reporting purposes. If nothing else, OIT's cost-allocation analysis has provided the State of New Hampshire with a better accounting of its true IT costs than it had before.

Finding #3: Even though OIT is part of the Executive Department, the agency was never clearly empowered nor given adequate strategic guidance.

Under its enabling legislation, OIT's mission and strategy are to be informed by a state Information Technology Council, and OIT management is accountable to the Governor and IT Council for effective execution of the agency's strategy. In fact, the IT Council has never met, and neither Governor Benson nor a designee ever promulgated a formal, customer-agency-informed strategic plan to guide OIT's operations and service delivery.

In the absence of senior executive guidance, OIT since its establishment has made many unilateral IT resource-allocation decisions that affect the services and operating strategies of other state agencies. Some agencies have found that, left to its own devices, OIT does not consistently make the "right" decisions from their points of view.

The IT Council was conceived originally as a "board of directors" for OIT and was expected to be an important communications link and buffer between OIT and its clients. Without the council or an effective executive substitute, OIT to date has had neither adequate strategic direction nor strong senior sponsorship. This situation has made it difficult for OIT to form partnerships with its various (and sometimes conflicting) constituencies inside and outside of state government. For agencies with special needs and perhaps a strong aversion to change, resisting OIT's attempts to introduce statewide IT standards and pursue other cross-agency efficiencies will remain an option as long as executive sponsorship for OIT is perceived to be weak or nonexistent.

Finding #4: Despite a premature launch, resource constraints, and insufficient strategic direction, OIT has laid a good foundation for future success during its first 18 months of operation.

Technical Accomplishments

Since its establishment, OIT has done much to establish critical IT standards across state agencies and ensure consistent end-user support for common desktop applications and equipment. These accomplishments are key to IT cost reduction across state government in the long term.

One of OIT's most successful initiatives is the creation of a central help-desk for all supported state agencies. The help-desk is an essential foundation on which many of OIT's other client support services are and will be based.

OIT also is rolling out centralized SPAM control for its customer agencies. Perhaps because it is a service that nobody even knows about until something goes wrong, OIT's introduction of the *IronMail* enterprise-level anti-SPAM solution starting in June 2004 has not received much attention. In fact, this initiative has significantly improved the security of the State of New Hampshire's agency computer networks and the integrity of state agencies' different e-mail systems. So far, IronMail has been rolled out to 12 of the largest state agencies' computer networks, including those of DOT, DES, DOS, DHHS, DRA, DOC, DRED, the Department of Cultural Resources, the Department of Fish & Game, the Liquor Commission, the Lottery Commission, and OIT itself. By the end of April 2005, IronMail will protect nearly 90% of all state agency end-users. Virtually all of them will be protected by July 2005.

On the other hand, OIT's efforts to consolidate state agency Web servers and mainframe-computing environments have had mixed results. Consolidation of agency Web servers has proceeded at a reasonable pace, but OIT has found itself trying to "bail out the boat while water is still rushing in." As more agencies move to do more business online, their Web server infrastructure requirements are growing rapidly, and many stand-alone agency Web servers remain in production. With regard to mainframe computers, OIT has not yet been given license to undertake any major consolidation initiatives, so little progress has been made.

Organizational Accomplishments

Consolidation of the State of New Hampshire's IT technical resources under OIT apparently has been a positive development from the point of view of career development and opportunity for state government IT professionals. Bringing these professionals under one management structure affords them the opportunity to work on a greater variety of technical projects for a more diverse customer base than would have been possible were each of them still restricted to just one agency and its specific IT operations and projects. In addition, the broad IT management structure made possible through the creation of OIT brings with it more and more diverse career-advancement options for the state's skilled IT professionals.

As a whole, the OIT management structure creates a deep pool of technical expertise that would not have been possible within individual agencies without significant increases in each agency's own IT budget and numerous duplications of technical resources among agencies. Nevertheless, in spite of the potential economy and value of such consolidation, OIT senior management's initial failure to communicate clearly and frequently the rationale for and expected benefits of the new arrangement allowed confusion to develop among operating agencies and helped generate feelings among many agency managers that they were losing control of their former IT resources for no discernible gain in service.

Finding #5: OIT has not been given the right resources to satisfy its customers and achieve its potential.

When OIT was created, it received technical managers and staff members from nine different agencies. In addition to being responsible for managing most of the IT infrastructure and service needs of the nine agencies from which they came, the transferred technical personnel immediately became responsible for attending to the IT requirements of all other state agencies that previously had no technical resources of their own. As described earlier, OIT also became responsible for handling the IT-related administrative needs (e.g., equipment and software procurement and service contracting) of all its customer agencies, even though virtually no administrative personnel had been transferred to OIT along with the technical personnel.

Since its inception, then, OIT's resources have been stretched thin. In particular, they are not adequate to meet the current development plans of OIT's customer agencies. For those state agencies that did not have their own IT resources before OIT's formation (a.k.a., the "small agencies"), pent-up demand for IT development and technical support is considerable. OIT's current complement of technical resources has the expertise to address the needs of these agencies, but it does not have enough of them to do so *and simultaneously* satisfy all the requirements of those agencies (a.k.a., the "large agencies") that had their own IT resources before OIT was launched. Consequently, OIT from the start has struggled to meet the new raised service expectations of the small agencies and still maintain the service levels the large agencies apparently enjoyed before July 2003.

Under these circumstances, only skillful management of customer agency relationships could have prevented most agencies from being dissatisfied with OIT. But, as already described above, OIT's senior management did not meet this challenge during the agency's first year. Senior management failed to communicate clearly and often with OIT's customer agencies and their legislative advocates to make them aware of OIT's approach to meeting its customers' most critical needs within the agency's resource limits.

RECOMMENDATIONS

Recommendation #1: Activate the Information Technology Council and charge it with developing a long-term strategic plan for New Hampshire state government's enterprise-wide IT priorities, management, and organizational structure.

The Information Technology Council, OIT's "board of directors," should be convened with the Governor's explicit support without further delay. It must become an active partner in improving OIT's communications with its customer agencies and begin to provide strategic guidance on statewide IT policy and operations. As part of advising the Governor and CIO on state government's long-term information technology strategy, the IT Council also should evaluate and make recommendations regarding the best organization of state IT resources to ensure consistently good and cost-effective service to New Hampshire's citizens as state government comes to rely on more sophisticated and powerful technologies to run its operations.

IT Council Mission

By law (RSA 4-D:4), the IT Council is responsible for overseeing and advising OIT on:

- Development of statewide information technology plans, policies, and standards
- IT systems consolidation and implementation of centralized IT services
- IT resource allocation and budgeting
- IT service procurement and outsourcing.

For example, as originally envisioned the IT Council is supposed to help OIT prioritize opportunities to consolidate the state government's IT infrastructure. In addition, the council is supposed to serve as a forum in which key stakeholders are represented and can have timely input into strategic decisions about statewide IT policy and management that will affect them. Had the IT Council been convened at the formation of OIT and remained engaged, many of OIT's start-up difficulties and many of its customer agencies' frustrations during OIT's first 18 months of operation might have been avoided.

IT Council Membership

The IT Council includes 11 members, as follows:

- The commissioners of the state departments of Administrative Services, Health and Human Services, Revenue Administration, Safety, and Transportation (or their designees)
- Two other state department heads appointed by the Governor
- One representative appointed by the Speaker of the House
- One senator appointed by the Senate President
- One county government representative and one municipal government representative, both appointed by the Governor.

Recommendation #2: The IT Council should identify, review, and make recommendations to the Governor and the Legislature regarding the coordination, timing, and funding mechanisms to be used for the state's major IT initiatives.

Once convened, the IT Council should evaluate the status of all major state agency IT projects either underway or planned for commencement within the next 12 months, including:

- Enterprise Resource Planning (ERP) System project
- Medicaid Management Information System (MMIS) reprocurement project
- Motor Vehicle Systems replacement project (covering MAAP, COMPASS, and MIRS)
- Legal Case Management System (LCMS) development project (for the Department of Justice)
- Traffic Management Center and Emergency Operations Center Automation development project (for the departments of Safety and Transportation)

For each project, the council's evaluation should address the need for cross-agency coordination and identify opportunities for sharing specialized resources among the agencies involved. If possible, the council also should consider whether and how the coordination and timing of these projects might be arranged so as to:

- Maximize the total funding available for all projects, especially from non-General Fund sources;
- Take advantage of economies of scale and opportunities for sharing standard resources among projects;
- Ensure the greatest possible standardization of security protocols, databases, and technology platforms among projects.

The IT Council also should evaluate, define, and facilitate the role OIT is to play in cross-agency support of critical IT infrastructure and delivery of IT services. Among its top priorities, the council should review and make recommendations to the Governor and Legislature for using OIT to:

- Enhance IT network security and assure continuity of IT operations across state agencies and potentially across county and municipal agencies;
- Enforce compliance with commonly required IT standards (e.g., ADA government website standards) across state agencies; and
- Provide (or manage vendor provision of) primary IT logistical support for state agencies.

Recommendation #3: Ensure good partnerships between OIT and its customers.

By September 2005, OIT should develop a Memorandum of Understanding (MOA) and Service Level Agreement (SLA) with each of its customer agencies to set reasonable expectations for service and create a formal basis for holding OIT and each customer agency accountable for their respective service commitments. These MOAs and SLAs should specify results for the New Hampshire public, not just resource inputs. For example, to better serve a customer agency's constituents, the MOA and SLA between OIT and a licensing agency might set goals such as reducing the time required for an applicant to obtain a license by 50% or reducing the agency's cost of delivering the license by 60%. Such formal arrangements are a standard "best practice" in the private sector and in well-managed public enterprises.

Recommendation #4: OIT should work with its customer agencies to implement strong and repeatable project management practices.

While preparations for New Hampshire state government's two biggest information technology projects – the Enterprise Resource Planning (ERP) System Project and the Medicaid Management Information System (MMIS) Project – appear to include implementation of sound project management practices, it is not clear that all state government IT projects are managed with equal vigor and attention to detail. Ensuring that all major IT projects are managed well in a consistent manner across agencies will be more of a cultural challenge than a technical one. It will require focus and commitment from both OIT and the managers of its customer agencies.

To this end, OIT should seek frequent, detailed guidance from the IT Council on when and how best to extend to all customer agencies the "best practices" used to manage the ERP and MMIS projects. This effort should be approached not as a confrontational or "win-lose" proposition for OIT and its customers, but as another important service that needs to be delivered in a way that fully meets customer expectations. Implementation of consistent, repeatable project management practices across state government should help customer agencies achieve their major IT project goals quickly and smoothly and learn from and avoid repeating others' past mistakes.

Recommendation #5: Provide OIT with sufficient resources to manage its business functions well, and to address the IT needs of small state agencies that previously were underserved.

Ensuring that OIT's resources are adequate to keep its customers happy most of the time will require providing the agency with the *right* resources, rather than more resources. To this end, using existing position vacancies as much as possible, OIT management should seek to augment its staffing mix so as to:

- Ensure OIT's administrative functions (e.g., Purchasing, Billing, and Financial Management) can be performed in a timely and reliable manner;
- Expand central help desk services to cover all OIT's current customer agencies; and
- Provide at least a minimum level of central help desk services and field support to those "small agencies" that traditionally have had no IT support and are not current OIT customers.

In addition, to reduce OIT's administrative workload, its role as the gatekeeper for agency IT commodity purchases (e.g., of printer cartridges, small computer peripherals, etc.) should be reduced. Specifically, with the advice of the IT Council on the best levels at which to set the requirement for different commodities, OIT should not be required to review agency IT commodity purchases valued at less than $1,000.^{00}$.

2. MANAGEMENT OF MAJOR STATE INFORMATION TECHNOLOGY PROJECTS

BACKGROUND

A significant portion of New Hampshire state government's IT expenditures are made to develop and implement major business systems for the agencies. During the next biennium, two of the state government's largest applications are scheduled for replacement.

Enterprise Resource Planning (ERP) System

ERP is the most significant IT project that New Hampshire will undertake this decade. It will impact every agency in all three branches of state government. The project will replace the current Budgeting, Financial and Human Resources Systems. It will offer opportunities to change the way state government interacts with vendors in the bidding and invoicing processes. It will offer opportunities for employees to use self-help functions in payroll and benefits. As a whole, the project promises to improve significantly the way in which much of New Hampshire state government functions.

The primary challenge to the success of this project will be the availability and allocation of appropriate staff resources. Most state agencies have a limited number of "experts" who are critical to meeting the daily operational needs of their agencies. Taking advantage of the opportunity to improve business processes that the ERP project offers will require agencies to find ways to allocate a significant of the time of these "experts" to the project.

Medicaid Management Information System (MMIS)

MMIS manages over $700 Million in Medicaid benefits each year. It interacts with medical and dental providers throughout New Hampshire and in some other states. The existing system is more than ten years old and no longer meets the needs of state healthcare programs. Faced with the challenge of increasing medical service costs, New Hampshire state government needs a system that can easily grow to meet the needs of both current and future programs, and that can help control these programs' significant costs.

FINDINGS

Finding #1: The State of New Hampshire is in acute need of a new ERP system.

At present, New Hampshire state government is an enterprise with an annual budget of more than $4 billion that effectively is managed using basic personal computer spreadsheet software. The mainframe automated financial management information system that captures most of the state's financial transactions and generates its summary management reports was developed in the 1980s and has been only modestly updated since then. This financial management system does not allow real-time tracking of revenues and expenses against budgets, nor can it generate detailed financial management reports that can be used for day-to-day operating agency management.

Consequently, financial management of New Hampshire state government is almost completely retrospective and highly labor-intensive. The current plan to procure and implement a new Enterprise Resource Planning system for New Hampshire under the auspices of the Department of Administrative Services (DAS) is critical to improving

the overall management of state government and understanding and controlling revenues and costs much better than is currently possible. New Hampshire's new ERP system is long overdue. Its implementation will require focused attention at the highest levels of the executive and legislative branches to be completed well and on time.

Finding #2: Implementation of the ERP system is an important opportunity to improve fundamentally the way New Hampshire state government conducts business.

The plan for New Hampshire's new ERP system is not intended simply "to pave over the cow paths." An essential part of the new system's implementation will be to revise significantly most, if not all, major state business processes, including those related to payroll management, human resources management, purchasing, revenue accounting, and financial reporting. State operating agencies' current, highly manual business processes will not be automated as is ("paved over"), and some may even be eliminated as part of ERP implementation.

Critical to the successful revision of business processes across state agencies will be the detailed definition of strategic business objectives for the new ERP system. When articulated, these objectives should form a comprehensive new vision for how the regular business and reporting of results will be standardized and managed across the whole enterprise, including all agencies of state government.

Finding #3: To achieve its primary business objectives and be completed on time and within budget, the ERP project needs to have the right resources.

The experience of countless public and private sector organizations with regard to the implementation of new ERP systems is conclusive: Implementations that have the full commitment of all the critical business operations of an organization will be successful; implementations that have anything less will take longer, cost more, and inflict more pain on the organization by the time they are completed, if they are completed.

The key to an effective ERP implementation is the revision or replacement of existing business processes. An organization must be prepared to devote many of its best and most knowledgeable business managers to its ERP project. This is not optional, and there can be no exceptions without risking the ultimate success of the project.

Looking outside to the ERP vendor community, DAS apparently has executed the ERP procurement process well so far. New Hampshire's ERP Request for Proposals (RFP) is quite explicit about the level of resources and time that a successful bidder will have to devote to the project to meet state requirements. Looking inside to state operating agencies, however, DAS has not been as explicit in estimating the resources and time that individual agencies will have to devote to the ERP project for it to be successful. Before the ERP contract is awarded and the project commences, the agencies that will play the most critical roles in the ERP project must understand in detail and accept the level of commitment that will be required of them. If this is not done, New Hampshire's ERP project will be compromised from the start.

Finding #4: While adequate provision for security and disaster mitigation appears to be in place for the state's major projects, such protection needs to be standardized across agency IT operations.

As befits two high-profile, multi-million-dollar systems projects, planning for the ERP and MMIS projects appears to include strong provision for security and disaster recovery. Such provision, however, is not yet standard across the existing IT operations of New Hampshire state government, which presents a significant risk to the integrity and continuity of some. While OIT has been attempting to rectify this situation incrementally – by implementing the *IronMail* anti-SPAM solution, for example, as well as taking other actions to protect and back-up state IT networks – no comprehensive solution to the protection of state agency IT operations has yet been attempted. New Hampshire's pending ERP project may present a good opportunity to do this.

RECOMMENDATIONS

Recommendation #1: The Governor's Office and operating agencies should support and help guide implementation planning for the state's new ERP system.

New Hampshire state government should take full advantage of the ERP project opportunity to improve its major business processes. Best practices should be embraced and emphasized as part of the project. Both business process and business information re-engineering should be integral parts of the ERP implementation.

To ensure this critical opportunity is not missed, the Governor and Administrative Services Commissioner together should appoint an ERP Advisory Board of outside experts with experience in implementing ERP systems. This advisory board should periodically meet with the Governor, the Administrative Services Commissioner, and the IT Council to review plans and progress on New Hampshire's ERP implementation. The main objective of the board's advice would be to help the ERP project leadership team identify and pursue all feasible business process improvements that Advisory Board members have encountered through their experience with ERP implementations in other organizations.

Recommendation #2: Adequate time should be taken to review the ERP implementation plan in detail to ensure that its business objectives are strategic, clear, and measurable.

Before New Hampshire's selected ERP implementation vendor is authorized to proceed, the vendor should be required to submit to the Governor, Administrative Services Commissioner, and the IT Council a summary of the vendor's understanding of the state's business objectives for the project. Even if these are not specified in the vendor's original ERP proposal, the objectives should be described in a manner that could be presented to and understood by members of the general public. In particular, the summarized objectives should be clearly strategic in nature and have attached to them simple, measurable improvement outcomes that individual citizens can readily appreciate. The vendor's statement of objectives should not be accepted by the Governor, Commissioner, and IT Council until they are satisfied that the statement is complete and meets this citizen-oriented standard.

Recommendation #3: Agencies should develop strategies to allow the best resources to engage fully in the ERP project.

Before New Hampshire's selected ERP implementation vendor is authorized to proceed, DAS should update and provide full details of its estimates of the resources state agencies will be expected to devote to the project as planned. Agencies then should have the chance to offer their own plans for satisfying these resource requirements.

While this approach could slightly delay the start of the ERP project, it will be time well spent if it ensures the agencies involved understand and formally accept the level of commitment that will be required of them. Making this extra planning investment early in the ERP project will pay long-term dividends. Not making it could result in much inter-agency acrimony, costly project delays, and avoidable substandard results.

Recommendation #4: Security, emergency preparedness, and disaster recovery should be addressed from an enterprise perspective, not just at the individual project level.

OIT should seek guidance from the IT Council and the ERP project leadership team on when and how best to extend the protective conventions put in place for the ERP system to all state agency IT operations. The objective would be to "piggy-back" on the new security and other protective systems implemented as part of the ERP system and eventually have all agency IT operations and IT projects use them as a standard. OIT's approach to pursuing this objective should not add cost or time to, or otherwise interfere with the progress of, the ERP project.

3. ONGOING INFORMATION TECHNOLOGY COST REDUCTION AND SERVICE IMPROVEMENT

In the long term, as state business processes and transactions are reengineered and better automated, total spending on information technology across state government should increase at a slower rate than other types of spending. To realize the long-term benefits of such reengineering and improved automation, New Hampshire will need to take an enterprise-wide view of its IT assets and investments.

FINDINGS

Finding #1: As the state continues to embrace high-bandwidth network communications as the foundation for its IT operations, consolidating technical resources to develop software applications and manage agency IT infrastructures will become increasingly cost-effective.

To reduce total IT expenses across the enterprise, the variety and complexity of state government's IT resource and service requirements needs to be kept to a minimum. In the long term, IT cost savings therefore will be most readily realized through consolidation and improvements in the management of the state's overall IT infrastructure, and through more effective enterprise-wide procurement of state IT services.

Information Technology Infrastructure Management

Given the state's growing reliance on technically-sophisticated IT systems and networks to deliver services to citizens and manage its businesses, New Hampshire state government will be able to minimize its enterprise-wide IT costs *only if it is successful in keeping to a minimum* the diversity and complexity of its overall IT infrastructure. To do this, New Hampshire state government will need to introduce and enforce across agencies more uniform standards than it has applied to date regarding the types of IT platforms, operating systems and databases, desktop equipment, and support services on which agency IT operations are based.

At present, New Hampshire state government agencies operate and maintain (or require vendor maintenance of) a virtual smorgasbord of hardware platforms, operating systems, large-scale software applications, and databases. With regard to major computer hardware, for example, the platforms currently in use range from SUN and IBM mainframe computers installed at the Department of Health and Human Services and at the Department of Safety in the early and mid-1980s, to a Bull Escala platform used at the Department of Corrections and a Unisys mainframe used at the Department of Transportation since the late 1980s, to IBM AS400 computers used at the Department of Revenue Administration and at the Department of Labor since the early 1990s. Along with this wide array of different platforms goes an equally diverse set of operating systems, databases, and major software applications. Some of these IT assets are proprietary, meaning only their original vendors can maintain and update them for the agencies that use them. Many of them are incompatible with each other. All of them require distinct personnel skill sets and training to ensure they can be used and maintained properly.

Information Technology Services Procurement

Because of the nature of IT services (e.g., software application development, technical training, call-center establishment and operation, etc.), state government or any of its agencies is not simply buying a "widget" or "one-size-fits-all" commodity when it seeks IT services from commercial vendors. Instead, it is often buying highly specialized technical expertise and valuable intellectual property. This requires different approaches and technical

capabilities on the part of state officials who manage IT service procurements than the approaches and capabilities applied to the purchase of commodities (e.g., office supplies, road salt, etc.) and non-technical services. IT service vendors typically are not willing to place their corporate assets or intellectual property at risk under the usual terms and conditions that govern state government commodity purchases. Nor are they willing to make significant changes to the standard terms and conditions that govern their transactions in the commercial market.

When it comes to the procurement of IT services, the manner in which a procurement is defined up front – *even before vendors are asked to submit proposals for service* – ultimately will determine how well and cost-effectively it is executed. Thus, having procurement managers with deep technical expertise in the services and assets they help purchase for state agencies is critical to getting the best long-term value. And, as with the management of the state's IT infrastructure, buying, using, and maintaining a limited set of compatible IT assets and services – rather than procuring and trying to maintain a widely diverse set of IT equipment and services – is key to concentrating the appropriate technical expertise within New Hampshire state government. Having procurement managers with deep knowledge of a finite set of IT infrastructure and service requirements will help ensure the contracts they orchestrate are consistently favorable and economical for the state and its agencies.

Finding #2: Agency IT projects are not systematically evaluated to ensure they will have an adequate payback for state government as a whole.

Even though certain IT investments might not be worthwhile for just one or a few agencies to pursue, they could still provide long-term savings for state government as a whole. One example would be consolidating mainframe environments across the state government enterprise. Funds would be required up front to procure hardware and software to support the consolidated environment. But potential reductions in operating and maintenance costs resulting from such consolidation could be sufficient to offset the up-front cost within a reasonable payback period. Similarly, investment in software tools to automate IT support tasks for all agencies that traditionally have required a large staff (e.g., software distribution, patch management, and remote support) could pay for itself in a short time.

New Hampshire state government currently lacks a standard methodology for identifying and evaluating the likely return on investment of such potential investments. Without such a methodology, the State of New Hampshire may not be investing enough in the right IT initiatives, those that have the greatest potential to produce long-term IT cost savings for state government as a whole.

RECOMMENDATIONS

Recommendation #1: Standards should be actively pursued and implemented across the state government IT infrastructure.

Many of New Hampshire's IT assets have already or will reach the end of their useful lives within the next few years. This presents an excellent opportunity for state government to reduce through strategic standardization the broad array of IT platforms, systems, application development environments, and databases it now maintains. By doing this, the state will be able to develop and maintain more cost-effectively than would otherwise be possible the in-house technical expertise and relevant management experience needed to manage its IT infrastructure.

Comprehensive IT infrastructure standardization also offers great opportunity for long-term service contract savings. Moving to have state IT maintenance and support staff develop expertise in just a few products and services should help reduce the state's dependence on outside contractors over time and thereby keep costs down even more.

Recommendation #2: Agency data centers should be consolidated as much and as soon as possible.

In addition to comprehensive IT infrastructure standardization, the State of New Hampshire should actively pursue state agency data center consolidation. This initiative has the potential to reduce overall state IT costs substantially. However, it is not one to be undertaken quickly without careful advance planning. The IT Council should be closely involved in the process of identifying and recommending which agency data centers to consolidate and when. The council's recommendations should take into consideration the expected payback of each proposed consolidation, as well as the appropriateness of any consolidation from the standpoint of data management, integrity, and security.

Recommendation #3: A funding methodology should be established to cover start-up costs for projects that will show a good return on investment within a two- to five-year period.

OIT should develop and review with the IT Council a standard methodology for identifying and evaluating in advance the return on investment of proposed major state government IT investments. Application of this methodology should become a required part of all state agency proposals for large or long-term IT projects. The methodology should include itemization of required initial development costs, specification of the total "cost of ownership" of a project, and determination of the project's likely return on investment (ROI) across state government over a period of no more than five years. OIT, with the advice of the IT Council, also should recommend a minimum ROI that any proposed project would have to meet to merit approval and ultimate funding.